

We Claim:

1. A process for the preparation of benzaldehyde comprising subjecting toluene to liquid phase oxidation in an organic solvent and in the presence of a catalyst system comprising of transition metal/metals and a bromide source as a promoter and in the presence of diluted oxygen, cooling the reaction mixture to room temperature and separating the product.
2. A process as claimed in claim 1 wherein the product is separated by distillation.
3. A process as claimed in claim 1 wherein the transition metal is selected from the group consisting of manganese, chromium, iron, vanadium, cobalt, molybdenum, and any combination thereof.
4. A process as claimed in claim 3 wherein the transition metal catalyst comprises a combination of manganese and iron or manganese and vanadium.
5. A process as claimed in claim 4 wherein the mole ratio of manganese to iron or manganese to vanadium is in the range of 0.1 to 10.
6. A process as claimed in claim 5 wherein the mole ratio of manganese to iron or manganese to vanadium is in the range of 0.2 to 5.0.
7. A process as claimed in claim 1 wherein the transition metal is used in the form of a salt selected from the group consisting of acetates, bromides, carbonates, fluoride, iodides, chlorides, nitrates, sulfates and vanadates.
8. A process as claimed in claim 7 wherein the transition metal salt is selected from the group consisting of acetates, chlorides and vanadates.
9. A process as claimed in claim 1 wherein the bromide promoter is selected from the group consisting of sodium bromide, hydrogen bromide and zinc bromide.
10. A process as claimed in claim 1 wherein the bromide promoter comprises sodium bromide.
11. A process as claimed in claim 3 wherein the concentration of manganese with respect to toluene is in the range of 0.1 – 7 mol %.
12. A process as claimed in claim 3 wherein the concentration of manganese with respect to toluene is in the range of 0.3 – 5.0 mol %.
13. A process as claimed in claim 3 wherein the concentration of iron or vanadium with respect to toluene is in the range of 0.1 – 5 mol %.
14. A process as claimed in claim 3 wherein the concentration of iron or vanadium with respect to toluene is in the range of 0.3 – 4.0 mol %.

15. A process as claimed in claim 3 wherein the concentration of the bromine with respect to toluene is in the range of 0.05- 5.0 mol %.
16. A process as claimed in claim 3 wherein the concentration of the bromine with respect to toluene is in the range of 0.1 to 3.0 mol %.
- 5 17. A process as claimed in claim 1 wherein the organic solvent comprises an aliphatic acid or an aromatic organic acid.
18. A process as claimed in claim 1 wherein the organic solvent is selected from the group consisting of acetic acid, benzoic acid and propionic acid.
19. A process as claimed in claim 1 wherein the organic solvent comprises acetic acid.
- 10 20. A process as claimed in claim 1 wherein the concentration of oxygen is in the range of 1-10 % in nitrogen.
21. A process as claimed in claim 1 wherein the concentration of oxygen is in the range of 2-7 % in nitrogen.
22. A process as claimed in claim 1 wherein the reaction is carried out at a temperature in the range of 70°-180°C and pressure in the range of 1-80 bar.
- 15 23. A process as claimed in claim 22 wherein the reaction is carried out at a temperature in the range of 90°-160°C and pressure in the range of 20-70 bar.
24. A process as claimed in claim 1 wherein the selectivity to benzaldehyde obtained is in the range of 60-75 % and benzoic acid and benzyl alcohol are obtained as side products.

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